NORTHWEST ARCTIC
SUBAREA CONTINGENCY PLAN

HAZMAT
SECTION

PART ONE **HAZMAT RESPONSE** C-1
A. Initial Notification of Response Agencies C-1
B. Recognition C-1
C. Evaluation C-3
D. Evacuation C-5
E. Direction and Site/Entry Control C-5
F. Command and Control C-6
G. Communications C-6
H. Warning Systems & Emergency Public Notification C-7
I. Health and Medical Services C-7

PART TWO **RESPONSIBLE PARTY HAZMAT ACTION** C-9
A. Discovery and Notification C-9
B. Removal Action C-9

PART THREE **STATE HAZMAT ACTION** C-11
A. Authority C-11
B. Response Policy C-11
C. State Response Capabilities C-11
D. Responsibilities C-12

PART FOUR **FEDERAL HAZMAT ACTION** C-13
A. Authority C-13
B. Jurisdiction C-13
C. Response Policy C-13

PART FIVE **SUBAREA HAZMAT RISK ASSESSMENT** C-15
A. General C-15
B. Facilities C-17
C. Transportation C-20
D. References C-28
Tables: C-1: Number of Facilities with Extremely Hazardous Substances (EHS) C-17
C-2: Other Chemicals –Northwest Arctic SCP Locations C-18
C-3: Oil and Liquid Gases –Northwest Arctic Subarea Locations C-19

PART SIX **RADIOLOGICAL AND BIOLOGICAL ISSUES** C-29

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HAZMAT: PART ONE - HAZMAT RESPONSE

A. INITIAL NOTIFICATION OF RESPONSE AGENCIES

All hazardous material releases in excess of the reportable quantity (RQ) must be reported by the responsible party to the National Response Center. Any release regardless of the amount is required to be reported to the State of Alaska, Department of Environmental Conservation (ADEC). Upon notification of a release, the NRC shall promptly notify the appropriate FOSC. The FOSC shall contact the ADEC. If the state receives notification first, the state shall notify the FOSC promptly. An emergency notification list is provided at the front of the Response Section to this plan. The FOSC and the SOSC (ADEC) will relay the notification to local communities, resource agencies, medical facilities, and others as necessary.

The community's local on-scene coordinator (LOSC) is in command and control until he or she determines that there is no longer an imminent threat to public safety. The LOSC can at any time request higher authority to assume command and control of an incident. Local emergency plans should be consulted for any specific directions or guidelines. The local fire department and/or the Local Emergency Planning Committee should have the most current records on local storage of hazardous materials that are in quantities that meet federal reporting requirements.

B. RECOGNITION

The recognition of chemical or physical hazards is essential to dealing with a release safely. Chemical and physical hazards may be confronted by emergency response personnel when responding to a hazardous material incident. Chemical hazards include biological, radioactive, toxic, flammable, and reactive hazards. Physical hazards include slips, trips and falls, compressed gases, materials handling, thermal, electrical and noise hazards, and confined spaces.

Once a hazardous material has been identified it is important to determine the hazards and properties. Thousands of substances exhibit one or more characteristics of flammability, radioactivity, corrosiveness, toxicity, or other properties which classify them as hazardous. For any particular hazardous category, the degree of hazard varies depending on the substance.

The degree of hazard is a relative measure of how hazardous a substance is. For example, the Immediately Dangerous to Life and Health (IDLH) concentration of butyl acetate in air is 10,000 parts per million (ppm); the IDLH for tetrachloroethane is 150 ppm. Tetrachloroethane is therefore far more toxic (has a higher degree of hazard) when inhaled in low concentration than butyl acetate. Vapors from butyl acetate, however, have a higher degree of explosive hazard than tetrachloroethane vapors which are not explosive.

Once the substance(s) has been identified, the hazardous properties and degree of hazard can be determined using reference materials. Chemical properties and the health hazards associated with the various materials transported in the Northwest Arctic subarea can be found in the USCG CHRIS Manual, the DOT Hazardous Materials Guide, and CAMEO (Computer-Aided Management of Emergency Operations) computer programs. Industry experts can be consulted as well. An excellent resource is the CHEMTREC 24-hour information number, 800-424-9300, supported by the Chemical Manufacturers Association. Additional references are provided below.

Although appropriate references give information about a substance's environmental behavior, additional field data will likely be required. Most frequently, air monitoring and sampling are needed to verify and identify the presence of hazardous materials, to calculate concentrations, and to confirm dispersion patterns.

Available references (with several websites) for HAZMAT and response organization information:
Many of the following publications/programs can also be found at ADEC offices and with the local fire departments.

- The Unified Plan, which addresses the Unified Command Structure in Annex B, Appendix II, and also provides statewide Hazmat response guidance in Annex L. http://www.akrrt.org/plans.shtml or http://www.dec.state.ak.us/spar/perp/plan.htm
- Commandant Instruction #16465.30
- National Contingency Plan (40 CFR part 300)
- The Alaska Incident Management System (AIMS) Guide (November 2002 Revision 1) http://www.akrrt.org/aim/aim_toc.shtml
- Coastal Sensitivity Atlas
- USCG CHRIS Manual
- DOT Emergency Response Guidebook (current edition) - http://hazmat.dot.gov/gydebook.htm
- CHEMTREC, Chemical/Hazardous Substance information, 800-424-9300
- SAX - Dangerous Properties of Hazardous Materials
- IMDC Codes
- Material Safety Data Sheets (MSDS) - http://www.hazard.com/msds/index.php
- NFPA Fire Protection Guide On Hazardous Materials
- NIOSH/OSHA/USCG/EPA Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities. Also, the NIOSH/OSHA Pocket Guide Book http://www.cdc.gov/niosh/npg/npg.html
- HartCrowser, Inc., 1999. 1998 Statewide Hazardous Material Inventory. Prepared for Alaska Department of Environmental Conservation, Division of Spill Prevention and Response.
- HartCrowser, Inc., 1999. Alaska Level A and B Hazardous Material Response Resources. Prepared for Alaska Department of Environmental Conservation, Division of Spill Prevention and Response.
- HartCrowser, 2000. Evaluation of Chemical Threats to the Alaska Public. Prepared for Alaska Department of Environmental Conservation, Division of Spill Prevention and Response.
- Oil and Chemical Response Reference Library at the Marine Safety Office in Valdez. This library consists of a Macintosh Computer System with CAMEO, plus all of the publications listed above. A complete library listing is maintained and updated as new/revised publications/programs are received.
- Spill Tactics for Alaska Responders (STAR) Manual, April 2006. http://www.dec.state.ak.us/spar/perp/star/index.htm
- Alaska Statewide Oil and Hazardous Substance Inventory for Reporting Year 2008, Ecology and Environment. Prepared for U.S. Environmental Protection Agency, Region 10.
- Statewide Hazardous Materials Commodity Flow Study, Nuka Research and Planning Group, 2010. Prepared for the Alaska Department of Environmental Conservation and the Alaska Department of Military and Veterans Affairs. http://dec.alaska.gov/spar/perp/hazmat/study.html

C. EVALUATION

To properly evaluate a hazardous materials release, the incident must be characterized. Incident characterization is the process of positively identifying the substance(s) involved and evaluating the actual or potential public health and environmental impacts. Characterizing a hazardous substance incident is generally a two-phase process, an initial characterization followed by a more comprehensive characterization.

1. Initial Characterization:

The initial characterization is based on information that is readily available or can be obtained fairly rapidly to determine what hazards exist and if immediate protective measures are necessary. During this initial phase, a number of key decisions must be made regarding:

- Imminent or potential threat to public health.
- Imminent or potential threat to the environment.
- Immediate need for protective actions to prevent or reduce the impact.
- Protection of the health and safety of response personnel.

If the incident is not immediately dangerous to human life or sensitive environments, more time is available to evaluate the hazards, to design plans for cleanup, and to establish safety requirements for response personnel. Information for characterizing the hazards can be obtained from on-scene intelligence (records, placards, eye witnesses, etc.), direct-reading of instruments, and sampling. Depending on the nature of the incident and the amount of time available, various combinations of these information gathering processes are used. The following outline describes an approach to collecting data needed to evaluate the impact of a hazardous materials incident.

- An attempt should be made to gather as much information as possible, such as:
  - X Description and exact location of the incident.
  - X Date and time of occurrence.
  - X Hazardous materials involved and their physical/chemical properties.
  - X Present status of incident.
  - X Potential pathways of dispersion.
  - X Habitation - population at risk.
  - X Environmentally sensitive areas - endangered species, delicate ecosystems.
  - X Economically sensitive areas - industrial, agricultural.
  - X Accessibility by air, roads and waterways.
  - X Current weather and forecast (next 24 to 48 hours).
  - X Aerial photographs/video when possible.
  - X A general layout and mapping of the site.
  - X Available communications.
- Off-site reconnaissance (that can be conducted in Level D) should be the primary inspection for initial

site characterization when the hazards are largely unknown or there is no urgent need to go on-site. Off-site reconnaissance consists of visual observations and monitoring for atmospheric hazards near the site. Collecting of off-site samples may identify substance migration or indicate on-site conditions.

Off-site reconnaissance would include:

- X Monitoring ambient air with direct-reading instruments for:
  - Organic and inorganic vapors, gases, and particulates
  - Oxygen deficiency
  - Specific materials, if known
  - Combustible gases and radiation
- X Identifying placards, labels, or markings on containers or vehicles.
- X Noting the configuration of containers, tank cars, and trailers.
- X Noting the types and numbers of containers, tank cars, trailers, buildings, and impoundments.
- X Identifying any leachate or runoff.
- X Looking for biological indicators - dead vegetation, animals, insects or fish.
- X Noting any unusual odors or conditions.
- X Observing any vapors, clouds, or suspicious substances.
- X Taking off-site samples of air, surface water, ground water (wells), drinking water, site runoff, and soil.
- X Reviewing the Dangerous Cargo Manifest.
- X Conducting interviews with workers, witnesses, observers, or inhabitants.

☐ An on-site survey (conducted in a minimum of Level B protection until hazards can be determined) may be necessary if a more thorough evaluation of hazards is required. On-site surveys require personnel to enter the restricted or hot zone of the site. Prior to any personnel conducting an on-site survey, an entry plan addressing what will be initially accomplished and prescribing the procedures to protect the health and safety of response personnel will be developed. On-site inspection and information gathering would include:

- X Monitoring ambient air with direct-reading instruments for:
  - Organic and inorganic vapors, gases, and particulates
  - Oxygen deficiency
  - Specific materials, if known
  - Combustible gases and radiation
- X Observing containers, impoundments, or other storage systems and noting:
  - Numbers, types, and quantities of materials
  - Condition of storage systems (state of repair, deterioration, etc.)
  - Container configuration or shape of tank cars, trailers, etc.
  - Labels, marking, identification tags, or other indicators of material
  - Leaks or discharges from containers, tanks, ponds, vehicles, etc.
- X Noting physical condition of material:
  - Solids, liquids, gases
  - Color
  - Behavior (foaming, vaporizing, corroding, etc.)
- X Determining potential pathways of dispersion - air, surface water, ground water, land surface, biological routes
- X Taking on-site samples of storage containers, air, surface water, ground water (wells), drinking water, site runoff, and soil.

2. Comprehensive Characterization:

Comprehensive characterization is the second phase, a phase which may not be needed in all responses. It is a more methodical investigation to enhance, refine, and enlarge the information base obtained during the initial characterization. This phase provides more complete information for characterizing the hazards associated with an incident. As a continuously operating program, the second phase also reflects environmental changes resulting from any response activities

Information obtained off-site and during the initial site entries can be sufficient to thoroughly identify and assess the human and environmental effects of an incident. But if it is not, an environmental surveillance program needs to be implemented. Most of the same type of information collected during the preliminary inspection is needed, but more detailed and extensive. Instead of one or two ground water samples being collected, for instance, a broad and intensive ground water survey may be needed over a long period of time.

Results from preliminary inspections provide a screening mechanism for a more complete environmental surveillance program to determine the full extent of contamination. Since mitigation and remedial measures may cause changes in the original conditions, a continual surveillance program can be used to identify and track fluctuations or ramifications.

D. EVACUATION

Neither the Coast Guard nor the EPA has the authority to order an evacuation of facilities or communities in the event of a release; this authority lies with local or state entities. However, evacuation should be strongly recommended to local civil authorities (police, fire departments, etc.) whenever a hazardous release poses a threat to surrounding personnel. With a release of hazardous materials, the area should be isolated for at least 100 yards in all directions until the material is identified. Only trained and properly equipped personnel should be allowed access.

Quick evacuation tables are located in the back of the DOT Emergency Response Guidebook. Evacuation should always begin with people in downwind and in low-lying areas. Continual reassessment is necessary to account for changes in weather wind, rate of release, etc. CAMEO should be used to provide an air plume trajectory model for downwind toxic plume distances. Again, constant reassessment will be required.

Issues concerning disaster assistance should be referred to DMVA/Division of Homeland Security and Emergency Management.

E. DIRECTION AND SITE/ENTRY CONTROL

The purpose of site control is to minimize potential contamination of emergency response personnel, protect the public from any hazards, and prevent unlawful entry onto the site which may result in an additional release of material, destruction of evidence, or prolong the cleanup effort. The degree of site control necessary depends on site characteristics, site size, and the surrounding community.

Several site control procedures should be implemented to reduce potential exposure and ensure an effective, rapid cleanup is conducted:

- Secure site, and establish entry control points.

- Compile a site map.
- Prepare the site for subsequent activities.
- Establish work zones.
- Use the buddy system when entering.
- Establish and strictly enforce decontamination procedures.
- Establish site security measures.
- Set up communications networks.
- Enforce safe work practices.

For a complete guidance on Direction and Site Entry/Control, refer to the NIOSH/OSHA/USCG/EPA Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities (Publication No. 85-115).

F. COMMAND AND CONTROL

The community's local on-scene coordinator (LOSC) is in command and control until he or she determines that there is no longer an imminent threat to public safety. The LOSC can at any time request higher authority to assume command and control of an incident. All applicable local emergency plans should be consulted. After the LOSC has determined that public safety is not at risk, then the Unified Command response organization will assume command and control of the incident.

Government response organization in the State of Alaska is based on the Unified Command structure of the Incident Command System (ICS), which is outlined in the Alaska Incident Management System (AIMS) Guide. The Unified Command brings together the FOSC, the SOSC, and the Responsible Party's Incident Commander (along with the LOSC if participation is warranted and available) into one governing unit. The ICS and the Unified Command structure are discussed in further detail in the **Unified Plan**, **Annex B** and in the **AIMS Guide**. The organizational structure and Hazmat team member duties and responsibilities for Hazmat response are also described in the AIMS Guide, Appendix B.

G. COMMUNICATIONS

A communications plan for all sections of the ICS will be established by the Incident Commander.

At this time, a pre-established generic communications plan accounting for the various police, fire, federal, state, and local frequencies has not been established. Federal and State communications resources are listed in **the Unified Plan, Annex E,** and in the Resources Section of this Plan.

H. WARNING SYSTEMS & EMERGENCY PUBLIC NOTIFICATION

For FOSC/SOSC access to emergency broadcast systems refer to the **Unified Plan, Annex E, Appendix III, Tab V.** For a listing of radio, newspaper, and television contacts refer to the Resources Section of this Plan.

Public Information/Community Relations guidelines and information are provided in the **Unified Plan, Annex**

I. HEALTH AND MEDICAL SERVICES

For hospital and clinic information refer to the Resources Section of this Plan.

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HAZMAT: PART TWO - RESPONSIBLE PARTY HAZMAT ACTION

A. DISCOVERY AND NOTIFICATION

Any person in charge of a vessel or a facility shall report releases of hazardous materials in excess of the reportable quantity (RQ) as defined in Table 1 of 49 CFR 172.101 to the National Response Center (NRC) (800-424-8802) in accordance with the National Contingency Plan. Any release regardless of the amount is required to be reported to the State of Alaska. Notification of the State can be done by contacting the Department of Environmental Conservation, either at the local office or through the 24-hour telephone number, 800-478-9300.

If direct reporting to the NRC is not immediately practicable, reports will be made to the Captain of the Port Western Alaska (the USCG FOSC for the Northwest Arctic subarea), (907-271-6700). The Environmental Protection Agency's predesignated FOSC may also be contacted through the regional 24-hour response telephone number (206-553-1263). All such reports shall be promptly relayed to the NRC.

In any event, ***the person in charge of the vessel or facility involved in a hazardous material release shall notify the NRC and the State of Alaska as soon as possible.***

As much information as possible shall be reported. This will include, but is not limited to, the following:

- Location of the release
- Type(s) of material(s) released, including any pertinent MSDS data
- An estimate of the quantity of material released
- Possible source of the release
- Date and time of the release
- Population and/or environment at risk.

B. REMOVAL ACTION

The responsible party shall, to the fullest extent possible, perform promptly the necessary removal action to the satisfaction of the predesignated FOSC and SOSC.

Regardless of whether or not a cleanup will be conducted, the responsible party shall cooperate fully with all federal, state, and local agencies to ensure that the incident is handled in a safe, proper manner.

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HAZMAT: PART THREE - STATE HAZMAT ACTION

A. AUTHORITY

The Alaska Department of Environmental Conservation is mandated by statute to respond promptly to a discharge of oil or a hazardous substance (AS 46.80.130). Additionally, the ADEC may contract with a person or municipality in order to meet response requirements, or establish and maintain a containment and cleanup capability (i.e., personnel, equipment and supplies) (AS 46.09.040).

B. RESPONSE POLICY

The ADEC is currently operating in accordance with an August 1992 policy decision which precludes ADEC personnel from responding to situations which require Level A/B protection. A reduction in FY 93 funding resulting in corresponding decreases in the level of equipage, training, and overall readiness. ADEC personnel are prohibited from responding with or using personal protective equipment beyond the Level C protection category (as defined in EPA standards).

For additional information regarding the State's general response policy, refer to the **Unified Plan, Annex A.**

C. STATE RESPONSE CAPABILITIES

The ADEC has entered into local response agreements with the Fairbanks North Star Borough (FNSB), the Municipality of Anchorage (MOA), the City of Valdez, the City of Kodiak, the City and Borough of Juneau, and the City of Ketchikan. These teams (along with the 103rd Civil Support Team, the EPA team, and other teams in the State) comprise the Statewide Hazmat Response Team. In the event of a hazmat release requiring immediate response, the ADEC predesignated SOSC may request support from any of the Hazmat Response Teams. These teams maintain a Level A entry capability and can respond beyond their jurisdictional boundaries at the request of the SOSC. The teams are to be used strictly for emergency response operations. Once the immediate hazard is dealt with, the teams will be released to return to their home station. Post-response recovery operations will be handled by the responsible party (if known) or through ADEC response term contractors or Federal contractors.

ADEC currently maintains several term contracts for hazmat assessment, contaminated sites and hazmat/unknowns response, and oil spill response. These term contractors are listed in the **Unified Plan, Annex E**. Several of these term contractors possess limited hazmat response capability.

Another state asset is the 103rd Civil Support Team (CST), based at Fort Richardson, Alaska. The 103rd CST can be requested through DMVA's Division of Homeland Security and Emergency Management, State Emergency Coordination Center (SECC – 428-7100 or 1-888-462-7100). The primary focus of the team is weapons of mass destruction (WMD), including chemical and biological warfare agents and toxic industrial chemicals. The 103rd CST maintains Level A entry capability and a wide variety of detection instruments and support equipment. The 103rd CST can be utilized in an advisory role for hazard modeling or medical assessment and in an assist mode to perform entries alone or in conjunction with other first responders.

D. RESPONSIBILITIES

State agency roles and responsibilities are clearly defined in the **Unified Plan, Annex A**. During a hazmat incident, the State On-Scene Coordinator's anticipated and prioritized response objectives are as indicated below:

- **Safety:** Ensure the safety of persons involved, responding or exposed from the immediate effects of the incident.

- **Public Health:** Ensure protection of public health and welfare from the direct or indirect effects of contamination on drinking water, air and food.

- **Source Mitigation:** Ensure actions are taken to stop or reduce the release at the source to reduce/eliminate further danger to public health and the environment.

- **Environment:** Ensure protection of the environment, natural and cultural resources, and biota from the direct or indirect effects of contamination.

- **Cleanup:** Ensure adequate containment, control, cleanup and disposal by the responsible party or take over when cleanup is inadequate.

- **Restoration:** Ensure assessment of contamination and damage and restoration of property, natural resources and the environment.

- **Cost Recovery:** Ensure recovery of costs and penalties to the Oil and Hazardous Substance Release Fund for response containment, removal, remedial actions, or damage.

HAZMAT: PART FOUR - FEDERAL HAZMAT ACTION

A. AUTHORITY

Section 311 of the Federal Water Pollution Control Act (FWPCA), and the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980 are the principal authorities for federal response to discharges of oil and releases of hazardous substances. The procedures and standards for conducting responses are contained in the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) (40 CFR 300). Under the NCP and the Unified Plan, each Coast Guard COTP for coastal zones, or EPA FOSC for inland zones, coordinates federal activities on-scene as either the predesignated FOSC or as the first federal official in the absence of the predesignated FOSC. The FOSC objective is to ensure rapid, efficient mitigation of actual or threatened pollution releases or discharges.

B. JURISDICTION

The NCP identifies the Coast Guard COTP for Western Alaska (Commanding Officer, Sector Anchorage) as the predesignated federal OSC (FOSC) for the coastal zone, and the EPA Region 10 FOSC for the inland zone. The FOSC will respond to hazardous substance releases, or threats of release, occurring in the coastal zone and not involving DOD vessels or DOD facilities, which originate from:

X Vessels

X Facilities, other than hazardous waste management facilities, when the release requires immediate action to prevent risk of harm to human life, health, or the environment.

X Hazardous waste management facilities, or illegal disposal areas, when the FOSC determines emergency containment or other immediate removal actions are necessary prior to the arrival of the EPA OSC.

For all shoreside incidents in the coastal zone, once the immediate threat to human life, health, or the environment has been abated and the character of the response changes to a long-term cleanup or site remediation, the FOSC responsibilities will be transferred from the USCG COTP to a designated EPA official.

Note: The Local On-Scene Coordinator (LOSC) would be the person in charge as long as there is an immediate threat to public health or safety. The LOSC may defer to the FOSC or SOSC (per the Unified Plan, Annex B).

C. RESPONSE POLICY

The USCG will follow the policy guidance contained in COMDTINST M16465.30, "Policy Guidance for Response to Hazardous Chemical Releases", and the Marine Safety Manual, Volume VI, Chapter 7 when responding to a hazardous chemical release. The USCG Incident Management Handbook also provides guidelines for responding to a hazardous substance release.

The USCG and other federal agencies in Alaska, will maintain a "conservative" Level D response capability level. "Conservative" response consists of recommending evacuating the affected area and maintaining a safe perimeter while attempting to positively identify the pollutant and outlining a clear course of action. Federal personnel, with the exception of specialized teams (e.g., the National Strike Force and the Pacific Strike Team, and the EPA START Team), will not enter a hazardous environment. This response posture is appropriate due to insufficient numbers of trained or equipped personnel to allow a safe and proper entry into a hazardous environment, and the low risk of a chemical release in the area. Refer to the Unified Plan for a description of the National Strike Force and other special forces.

Level D protection typically consists of a work uniform or coveralls, safety boots, safety goggles and a hard hat. It provides minimal protection. Level D must not be worn for "entry" into any hazardous materials situation. It does not provide ANY protection from chemicals. Level D strictly applies to non-hazardous environments (i.e., Command Post, Cold Zone, etc.).

In situations requiring an entry into a hazardous environment, federal agencies will rely on the capabilities of the USCG Pacific Strike Team, EPA Emergency Response Teams (ERTs), EPA contract teams such as START, state and local hazmat response teams if available, and industry or commercial resources.

In implementing this conservative response posture, the Coast Guard COTP Western Alaska and/or the EPA Region 10 FOSC will carry out all the FOSC functions not requiring entry of unit personnel into a hazardous environment. These functions include:

X Conducting preliminary assessment of the incident.

X Carrying out FOSC measures such as restricting access to affected areas, controlling marine traffic (safety zones), notifying affected agencies, coordinating with state and local agencies, and assisting as resources permit.

X Conducting local contingency planning.

X Identifying responsible parties, and informing them of their liability for removal costs.

X Carrying out "first aid" mitigation if the situation warrants and capability exists.

X Monitoring cleanup activities.

The CAMEO (Computer-Aided Management of Emergency Operations) computer programs will be an important part of any chemical release incident. The CAMEO chemical database with Codebreaker and Response Information Data Sheets modules provide a rapid means of identifying chemicals and their associated hazards. The ALOHA air modeling program, part of CAMEO, provides a rapid means of developing a downwind hazard evaluation. Sector Anchorage Port Operations Department personnel and/or the NOAA SSC, will be responsible for operating the CAMEO programs during a hazardous chemical release for the FOSC. Local fire departments and EPA also maintain CAMEO capabilities to assist in their response efforts. Programs for the ALOHA model need to be frequently updated to account for changing wind and weather conditions, source strength, and other variable conditions.

HAZMAT: PART FIVE - SUBAREA HAZMAT RISK ASSESSMENT

A. GENERAL

The Northwest Arctic Subarea includes the Northwest Arctic Borough and the area of the Seward Peninsula.

The region encompasses two Local Emergency Planning Districts (LEPD) as defined under State statute and the federal Emergency Planning and Community Right-to-Know Act of 1986 (EPCRA). These two LEPDs are the Northwest Arctic Borough LEPD and the Nome LEPD.

The region is characterized by predominantly isolated coastal communities with some communities located along interior rivers. Industrial activity is limited, with the exception of the Cominco Red Dog mine, located 60 miles northwest of Kotzebue, and other mining activities outside of Nome. Although the mines may use extremely hazardous substances in the mining operation, exposure is limited primarily to the worker population, except during periodic transport through or near populated communities.

1. Chemical Inventory

In a 2006 Tier Two Summary Report, two mining facilities reported 599,770 pounds of sodium cyanide, which is used in extracting gold from ore. This represented an increase of 306,505 pounds of sodium cyanide reported for 2003. A total of six communications facilities and three Military long range radar site (LRRS) facilities reported a total of 33,795 pounds of sulfuric acid, which represents an increase of 22,096 pounds since 2003. One Fish/Meat Processing facility reported 2,350 pounds of ammonia.

Bulk fuel facilities exist in this subarea at the following communities: Brevig Mission, Deering, Elim, Gambell, Golovin, Kivalina, Kotzebue, Koyuk, Nome, Saint Michael, Savoonga, Shishmaref, Stebbins, Teller, Unalakleet and Wales. Access to each of these communities is primarily by vessel, and fuel de-liveries are made periodically by tank barges. The Northwest Arctic subarea experiences over 200 to 500 fuel transfers annually, with a total fuel volume of less than 50 million gallons. Tank barges operate in the subarea for approximately four months out of the year, for a total of 20 transits annually.

2. Chemical Risks

This subsection identifies the hazards associated with the most common extremely hazardous substances present within the subarea in amounts greater than the federally-mandated threshold planning quantities. The properties of each substance and how they affect humans are discussed below. Of the extremely hazardous substances known to be present, ammonia poses the greatest threat.

Anhydrous ammonia is a colorless gas with a characteristic odor. The term "anhydrous" is used to distinguish the pure form of the compound from solutions of ammonia in water. Like chlorine, anhydrous ammonia is neither explosive nor flammable, but will support combustion. It readily dissolves in water to form an aqua ammonia solution. Anhydrous ammonia is considerably lighter than air and will rise in absolutely dry air. As a practical matter, however, anhydrous ammonia immediately reacts with any humidity in the air and will often behave as a heavier gas. The chemical reacts with and corrodes copper, zinc and many alloys.

Anhydrous ammonia affects the body in much the same way as chlorine gas. Like chlorine, anhydrous ammonia gas is primarily a respiratory toxicant. In sufficient concentrations, the gas affects the mucous membranes, the respiratory system and the skin. In high concentrations it can cause convulsive coughing, difficult and painful breathing, and death. Anhydrous ammonia will cause burns if it comes in contact with skin or eyes.

Sulfuric acid is a dense, colorless, oily liquid. It is highly reactive with a large number of other substances and is readily soluble in water with release of heat. Fumes are released from the liquid through evaporation, and heat as a result of fire or other chemical reaction can significantly increase emissions. Both the liquid and its solutions will cause burns if allowed to come in contact with skin or eyes. Fumes are highly toxic, and reaction of the acid with a variety of substances can produce other toxic gases.

Sodium cyanide is very toxic and normally shipped in solid form to the mining facilities in Alaska. It may be fatal if swallowed or inhaled. When sodium cyanide reacts with acid, hydrogen cyanide (HCN) is generated, which is an extremely poisonous gas.

3. Response Capability

There are no Level A Hazmat response teams in the Northwest Arctic subarea. In the event of a hazardous substance release, the ADEC should be contacted and they can take action to activate the Statewide Hazmat Response Team. This formally agreed arrangement allows ADEC to request a Level A Hazmat team to respond to an event anywhere in the state, as long as the requested Hazmat Team can spare the services of the equipment and trained personnel.

In addition, several of the larger industrial facilities within the subarea are required to have Risk Management Plans (RMPs) for chemicals exceeding threshold quantities under 40 CFR Part 68 regulations. The RMPs contain emergency response plans for mitigating facility releases. Large bulk fuel production and storage facilities within the subarea also are required to maintain Facility Response Plans and specific levels of response equipment to mitigate oil releases in accordance 40 CFR Part 112.20 regulations.

Several communities in the Northwest Arctic subarea have developed and maintain local emergency management plans, or all-hazard plans, to respond to a variety of emergencies including hazardous substance releases.

B. FACILITIES

A total of 28 facilities (3% of the entire reports received by the State of Alaska) submitted Tier Two reports for Reporting Year 2007.

Table C-1 summarizes the number of industrial facilities that store and utilize extremely hazardous substances in significant quantities. Table C-2 provides the general locations and facilities in the subarea that store and utilize other chemicals. Table C-3 identifies communities with industrial facilities that store, utilize, or produce significant quantities of petroleum products. Emergency responders should refer to the CAMEO database program to determine specific chemical hazards at a particular facility, based on Tier Two reporting requirements.

Table C-1: Number of Facilities with Extremely Hazardous Substances (EHS)

EHS	Max Amt (lbs)	No. of Facilities
Sulfuric Acid	33,795	8
Ammonia, Anhydrous	2,350	1
Sodium Cyanide	599,770	2
Total	**635,915**	**11**

Notes:
1. The Emergency Planning and Community Right-to-Know Act of 1986 (EPCRA) categorizes certain dangerous chemicals as Extremely Hazardous Substances (EHS).
2. The above table summarizes the most common extremely hazardous substances (EHS) present above the associated threshold quantities (TQ) as reported by facilities in the Northwest Arctic Subarea on Tier Two forms. Facilities in other communities within the subarea may have these and other extremely hazardous substances at quantities below the EHS TQ.
3. Consult the CAMEO database for information on all chemicals reported by facilities within the Northwest Arctic Subarea.

Table C-2:Other Chemicals –Northwest Arctic SCP Locations			
Hazardous Substance (HS)	**Max Amt (lb)**	**Avg Amt (lb)**	**Location**
Acetylene	347,900	53,900	Nome
Ammonium Nitrate Prills	1,448,000	1,448,000	Nome
Antiscalant	181,196	33,086	NW Arctic Borough
Antiscalant DVS40005 NALCO	36,420	6,070	NW Arctic Borough
Calcium Chloride Pellet	2,236,000	705,667	NW Arctic Borough
Calcium Oxide (Quicklime)	33,857,151	23,392,500	NW Arctic Borough
Copper Sulfate	9,555,528	5,384,202	NW Arctic Borough
Dextrin Powder	518,400	241,200	NW Arctic Borough
Ferrous Sulfate	440,000	440,000	Nome
Flocullant Magnafloc 10	154,300	59,148	NW Arctic Borough
Hydrochloric Acid	44,000	44,000	Nome
Hydromite Emulsions	504,000	504,000	Nome
Lead Concentrate	381,292,000	262,277,333	NW Arctic Borough
Methyl Isobutyl Carbinol (Bulk)	252,451	37,018	NW Arctic Borough
Oxygen	1,685,040	133,280	Nome
Road Fusee Strontium Nitrate	60	60	Kotzebue
Sodium Hydroxide	44,000	44,000	Nome
Sodium Metabisulfite	660,000	154,000	NW Arctic Borough
Xanthate Potassium Ethyl	1,111,040	710,933	NW Arctic Borough
Xanthate Sodium Isobutyl	1,082,399	641,481	NW Arctic Borough
Zinc Concentrate	1,578,064,000	863,233,333	NW Arctic Borough
Zinc Sulfate 1.2 MT	749,360	154,280	NW Arctic Borough
Zinc Sulphate	1,066,880	211,610	NW Arctic Borough

Note: The Emergency Planning and Community Right-to-Know Act of 1986 (EPCRA) requires facilities to report the presence of any chemical that has a Material Safety Data Sheet (MSDS) as administered by the Occupational Safety and Health Administration (OSHA) and is stored in amounts above certain threshold levels. In certain cases involving mining operations, facilities may be exempt from reporting under Mining Safety and Health Administration (MSHA) provisions.

Table C-3:Oil and Liquid Gases – Northwest Arctic Subarea Locations			
Substance	**Maximum Amt (lbs)**	**Average Amt (lbs)**	**Location**
Diesel Fuel	13,654,579	9,581,353	NW Arctic Borough
Diesel Fuel	28,965	21,724	Kotzebue
Diesel Fuel #1, Arctic Grade	2,800,000	41,845	Port Clarence
Diesel Fuel #1, Arctic Grade	2,048,704	1,361,034	Cape Lisburne
Diesel Fuel #1, Arctic Grade	1,814,713	651,200	Tin City
Jet A (Aviation Fuel)	117,000	58,500	Nome
Jet A (Aviation Fuel)	65,000	32,500	Kotzebue
Fuel, Trioxane DOT Class 4.1	13	13	Nome
Gasoline, Unleaded	29,600	18,500	Cape Lisburne
Gasoline, Unleaded	26,000	13,802	Tin City
Gasoline, Unleaded	3,000	1,500	Nome
Gasoline, Unleaded	1,800	900	Kotzebue
Heating Oil, DOT Class 3	11,385	9,108	Stebbins
Heating Oil, DOT Class 3	45,390	36,312	Gambell
Heating Oil, DOT Class 3	45,390	36,312	Kivalina
Heating Oil, DOT Class 3	34,080	27,264	Brevig Mission
Heating Oil, DOT Class 3	34,080	27,264	Elim
Heating Oil, DOT Class 3	34,080	27,264	Savoonga
Heating Oil, DOT Class 3	31,366	25,093	Kotzebue
Heating Oil, DOT Class 3	26,465	21,172	Nome
Heating Oil, DOT Class 3	22,770	18,216	Selawik
Heating Oil, DOT Class 3	22,770	18,120	Shungnak
Heating Oil, DOT Class 3	22,695	18,156	Buckland
Heating Oil, DOT Class 3	11,385	9,108	Teller
Heating Oil, DOT Class 3	11,385	9,108	Saint Michael
Heating Oil, DOT Class 3	11,385	9,108	Shaktoolik
Heating Oil, DOT Class 3	34,080	27,264	Shishmaref

Note:
1. The above table identifies communities where large quantities of petroleum products are present as reported by facilities in the Northwest Arctic Subarea on Tier Two forms.
2. Consult the CAMEO database for additional information on the quantities and specific locations of petroleum products at facilities within the Northwest Arctic Subarea.

C. Transportation

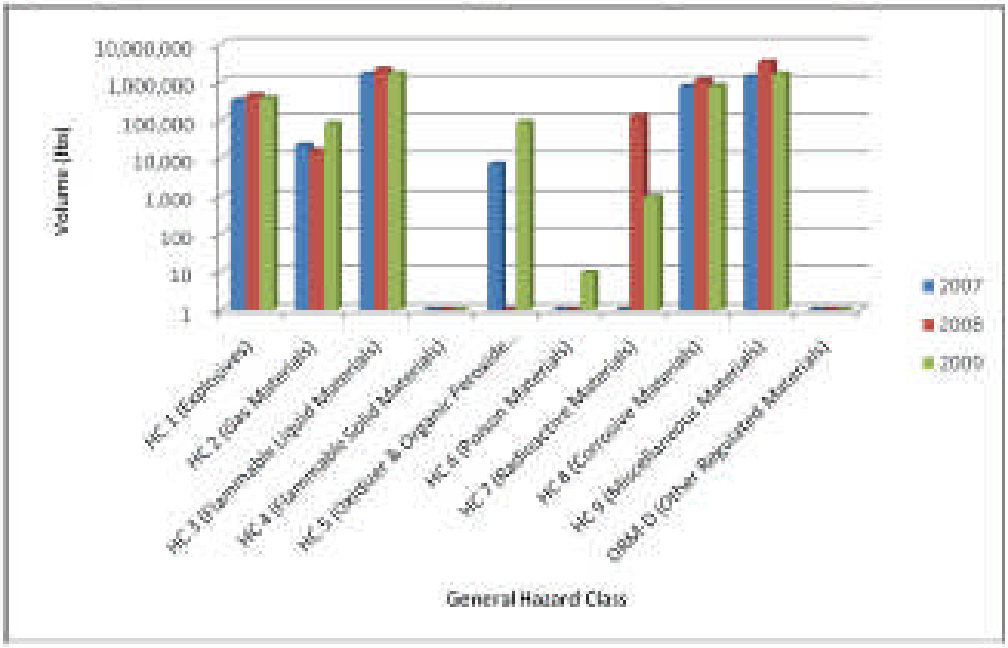
None of the transportation companies that responded to the 2005 Hazmat Commodity Flow Study survey reported any deliveries of oil and hazardous substances to communities in this subarea. However, bulk fuel facilities exist in this subarea at the following communities: Brevig Mission, Deering, Elim, Gambell, Golovin, Kivalina, Kotzebue, Koyuk, Nome, Saint Michael, Savoonga, Shishmaref, Stebbins, Teller, Unalakleet and Wales. Access to each of these communities is primarily by vessel, and fuel deliveries are made periodically by tank barges. The Northwest Arctic subarea experiences over 200 to 500 fuel transfers annually, with a total fuel volume of less than 50 million gallons. Tank barges operate in the subarea for approximately four months out of the year, for a total of 20 transits annually.

The following pages contain information from the Statewide Hazmat Commodity Flow Study conducted in 2010. The information provided is specific to the Cook Inlet subarea.

5.8 Northwest Arctic

The transportation of hazardous materials through the Northwest Arctic Subarea (NWA) includes two modes of transportation: air and marine. Many of the commodities listed as transiting this subarea are destined for other subarea locations. For example, hazardous materials shipments that are delivered via barge/vessel to the North Slope, or that are transiting from the North Slope to southern locations will be noted as transiting within the Northwest Arctic Subarea. The breakdown of hazardous materials volumes from year to year by Hazard Class is depicted in Figure 5-36 below.

Figure 5-36, Volumes of Hazardous Materials Shipped into the NWA presented on a log scale



In general, HC 3 commodities (Flammable Liquid Materials), HC 9 commodities (Miscellaneous Materials), and HC 8 commodities (Corrosive Materials) consistently dominated the volume of hazardous materials commodities shipped within the Northwest Arctic Subarea. Figures 5-37, 5-38, and 5-39 depict the volume of hazardous materials shipped as a percentage of the total volume for each calendar year evaluated for this study.

Figure 5-37. NWA Hazardous Materials Percentage of Total Volume by Hazard Class for 2007

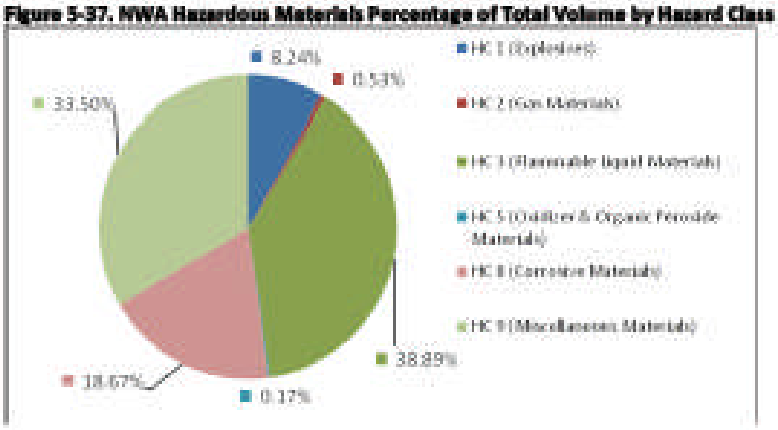


Figure 5-38. NWA Hazardous Materials Percentage of Total Volume by Hazard Class for 2008

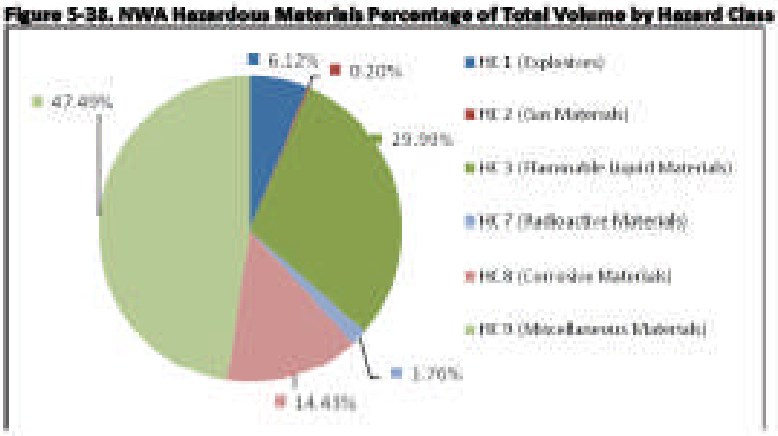


Figure 5-39. NWA Hazardous Materials Percentage of Total Volume by Hazard Class for 2009

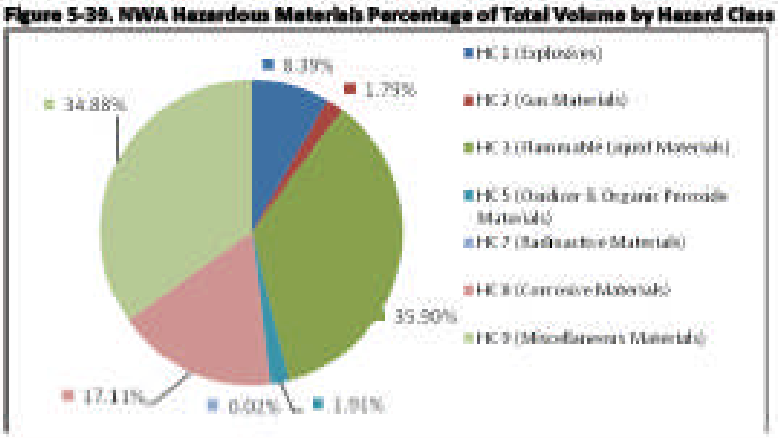


Table 5-55 lists the volume of hazardous materials shipped within the Northwest Arctic Subarea by hazard class for each calendar year evaluated for this study.

Table 5-55. Volumes of Hazard Class Transported within NWA Subarea by Calendar Year

Hazard Class	2007 (Total Volume in lbs)	2008 (Total Volume in lbs)	2009 (Total Volume in lbs)
HC 1 (Explosives)	326,575	451,350	379,800
HC 2 (Gas Materials)	20,802	15,067	81,268
HC 3 (Flammable Liquid Materials)	1,597,126	2,210,209	1,626,117
HC 4 (Flammable Solid Materials)	-	-	-
HC 5 (Oxidizer & Organic Peroxide Materials)	6,884	-	86,388
HC 6 (Poison Materials)	-	-	9
HC 7 (Radioactive Materials)	-	128,487	975
HC 8 (Corrosive Materials)	738,158	1,068,707	774,724
HC 9 (Miscellaneous Materials)	1,324,488	3,498,979	1,579,792
ORM-D (Other Regulated Materials)	-	-	-

A more detailed evaluation of each hazard class is provided below. A shipment volume threshold was not established for the Northwest Arctic Subarea due to the limited number and volume of shipments evaluated.

HC 1 Explosives: Similar to the Western Alaska Subarea, the primary explosives that were transported through the Northwest Arctic Subarea were HC 1.0. There was an approximate 30% jump in volume between 2007 and 2008, and then an approximate 25% drop between 2008 and 2009. The primary modes of transportation for these commodities in this Subarea were via air and marine. The volumes shipped via air, as noted in the previous section, are somewhat artificial and based on an algorithm generated from discussions with the air carrier. However, the volume changes for the most part were reflective of the changes in the number of hazardous materials shipments into the Northwest Arctic Subarea. Table 5-56 lists the primary HC 1 commodities shipped within the Northwest Arctic Subarea.

Table 5-56. Primary Hazard Class 1 Commodities Shipped within the NWA Subarea

Hazard Class	Hazardous Material Description (Greater than 1,000 lbs Shipped)	UN ID Number
1.0	Ammunition	0006

HC 2 Gas Materials: HC 2.2 represented the commodities shipped in the Northwest Arctic Subarea. The volume of shipments showed a slight decrease between 2007 and 2008, and an approximate 80% increase between 2008 and 2009. Table 5-57 lists the primary HC 2 commodities shipped within the Northwest Arctic Subarea.

Table 5-57. Primary Hazard Class 2 Commodities Shipped within the NWA Subarea

Hazard Class	Hazardous Material Description (Greater than 1,000 lbs Shipped)	UN ID Number
2.2	Sulfur Hexafluoride	1080
	Carbon Dioxide	1013
	Dichlorodifluoromethane or Refrigerant Gas R12	1028
	Nitrogen, Compressed	1066
	Compressed Gas, N.O.S.	1956
	Liquefied Gas, N.O.S.	3163
	Fire Extinguishers	1044

HC 3 Flammable Liquid Materials: The shipments of HC 3.0 within the Northwest Arctic Subarea were primarily shipped via aircraft. The volumes shipped, as noted in the previous section, are somewhat artificial and based on an algorithm generated from discussions with the air carrier. However, the volume changes reflect the changes in the number of hazardous materials shipments into the Northwest Arctic Subarea. Table 5-58 lists the primary HC 3 commodities shipped within the Northwest Arctic Subarea.

Table 5-58. Primary Hazard Class 3 Commodities Shipped within the NWA Subarea

Hazard Class	Hazardous Material Description (Greater than 1,000 lbs Shipped)	UN ID Number
3.0	Resin Solution	1866
	Alcohols, N.O.S.	1987
	Paint	1263
	Flammable Liquids, Corrosive, N.O.S.	2924
	Petroleum Distillates, N.O.S. or Petroleum Products, N.O.S.	1268
	Flammable Liquids, N.O.S.	1993
	Gasoline	1203
	Undecane	2330
	Combustible Liquids, N.O.S.	1993
	Butanols	1120

HC 4 Flammable Solid Materials: There were no Flammable Solid Materials transported within this Subarea during this time period according to the data evaluated.

HC 5 Oxidizer and Organic Peroxide Materials: HC 5.1 and 5.2 were shipped within the Northwest Arctic Subarea in 2007 and 2009. The volume of HC 5.1 increased by an order of magnitude between 2007 and 2009 while HC 5.2 shipments stopped during this

time period. Table 5-59 lists the primary HC 5 commodities shipped within the Northwest Arctic Subarea.

Table 5-59. Primary Hazard Class 5 Commodities Shipped within the NWA Subarea

Hazard Class	Hazardous Material Description (Greater than 1,000 lbs Shipped)	UN ID Number
5.1	Hydrogen Peroxide, Aqueous Solutions	2014
	Oxidizing Solid, N.O.S.	1479
5.2	Organic Peroxide, Type D, Solid	3106

HC 6 Poisons: A very small amount of HC 6.1 (Mercuric Chloride) was reported being shipped in 2009 within the Northwest Arctic Subarea. The small volume was retained for reporting purposes because it is classified as an EHS.

HC 7 Radioactive Materials: HC 7.0 was shipped within the Northwest Arctic Subarea in 2008 and 2009 as determined by the data evaluated for this study. The volume of shipments reported decreased dramatically between 2008 and 2009. Table 5-60 lists the primary HC 7 commodities shipped within the Northwest Arctic Subarea.

Table 5-60. Primary Hazard Class 7 Commodities Shipped within the NWA Subarea

Hazard Class	Hazardous Material Description (Greater than 1,000 lbs Shipped)	UN ID Number
7.0	Radioactive Material, Type A Package	2916
	Radioactive Material, Type A Package, Special Form	3332

HC 8 Corrosive Materials: The volume of HC 8.0 transported within the Northwest Arctic Subarea increased by approximately 30% between 2007 and 2008, and decreased by approximately 30% between 2008 and 2009. Table 5-61 lists the primary HC 8 commodities shipped within the Northwest Arctic Subarea.

Table 5-61. Primary Hazard Class 8 Commodities Shipped within the NWA Subarea

Hazard Class	Hazardous Material Description (Greater than 1,000 lbs Shipped)	UN ID Number
8.0	Corrosive Liquid, Basic, Inorganic, N.O.S.	3266
	Tetraethylenepentamine	2320
	Hypochlorite Solutions	1791
	Batteries, Wet, Non-Spillable	2800
	Batteries, Wet, Filled with Acid	2794
	Corrosive Cleaning Supplies	1760
	Sulfuric Acid	2796
	Formic Acid	1779

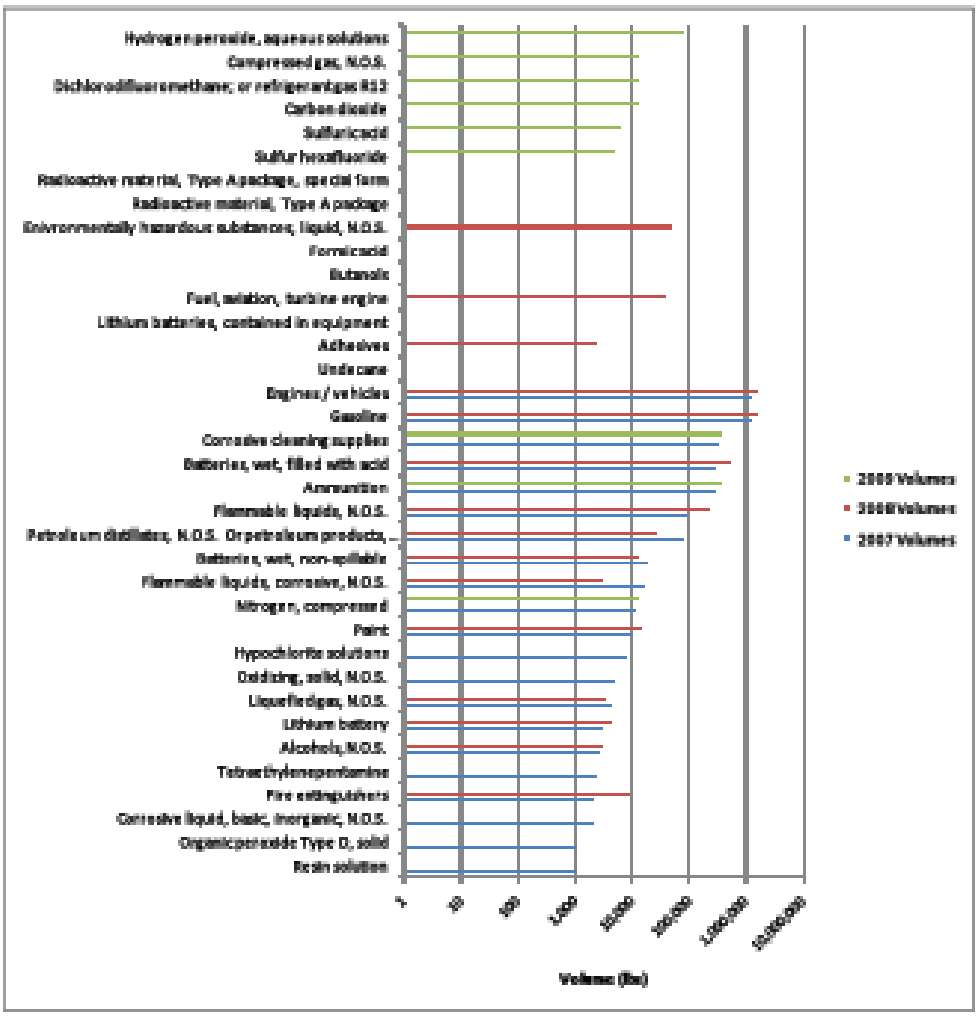
HC 9 Miscellaneous Materials: The volume of HC 9.0 commodities shipped within the Northwest Arctic Subarea saw a dramatic increase between 2007 and 2008 and then dropped but remained higher than 2007 levels in 2009. The sharp increase in 2008 could be attributable to the increase in the Alaska Permanent Fund Dividend checks during this timeframe. Table 5-62 lists the primary HC 9 commodities shipped within the Northwest Arctic Subarea.

Table 5-62. Primary Hazard Class 9 Commodities Shipped within the NWA Subarea

Hazard Class	Hazardous Material Description (Greater than 1,000 lbs Shipped)	UN ID Number
9.0	Environmentally Hazardous Substance, Liquid, N.O.S.	3082
	Engines / Vehicles	3166
	Lithium Batteries	3090
	Lithium Batteries, Contained in Equipment	3091

Figure 5-40 depicts the volume of hazardous materials shipped each year within the Northwest Arctic Subarea by Hazardous Material Name.

Figure 5-40. Hazardous Material Commodities by Hazardous Material Name (Greater than 1,000 lbs) for the Northwest Arctic Subarea, for 2007 through 2009, presented on a log scale.



D. References

Alaska Federal/State Preparedness Plan for Response to Oil & Hazardous Substance Discharges/Releases (Unified Plan) Change 3 January 2010, Alaska Regional Response Team, 2010 (as amended).

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Statewide Hazardous Materials Commodity Flow Study, Nuka Research and Planning Group, 2010. Prepared for the Alaska Department of Environmental Conservation and the Alaska Department of Military and Veterans Affairs. http://dec.alaska.gov/spar/perp/hazmat/study.html

HAZMAT: PART SIX - RADIOLOGICAL AND BIOLOGICAL ISSUES

Procedures for radiological response are included in **the Unified Plan, Annex J.**

Presently, a biological response is not addressed, and procedures are not under development for biological issues.

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